
VII. *An Account of an Experiment, touching an Attempt to produce Light on the Inſide of a Globe-Glaſs lin'd with melted Flowers of Sulphur, as in the Experiments of Sealing-Wax and Pitch. By Mr.* Fr. Hauksbee, *F. R. S.*

NOtwithſtanding Sealing-wax and Pitch afford ſuch ſurprizing Phænomena, rendring the Form of Bodies viſible thro' their Opake Subſtances, under the Circumſtances of a Vacuum and Attrition; yet there are other Bodies, by which very different Effects will be produc'd; of which I ſhall give you a very remarkable Example: And that is in Flowers of Sulphur, or Sulphur Sublim'd. About half a Pound of this Preparation I melted in a Ladle, and pour'd it into a Globe Glaſs, and uſed it in all reſpects as in the other Experiments. And when it was exhauſted, and Motion and Attrition given, I expected as before to have ſeen a Light on its inſide: But all that we could do had no manner of effect on it, in relation to ſuch an Appearance, neither when it was exhauſted, nor when repleate with Air: There was nothing to be obſerv'd but a very ſmall weak Light, which after long rubbing, ſhew'd it ſelf in that part where the Hand touch'd the Glaſs. But when I came to look upon it, I found the Sulphurous Lining all in a body diſengag'd from the Concave ſurface of the Glaſs. As to the Electricity of the Globe lin'd with this ſort of Matter; after the Attrition of it had been continued for ſome time, and

and the Glaſs was become pretty warm (at the ſame time full of common Air) the Hoop of Threads was held over it; but the Attraction was very inconſiderable on the lin'd part, though on the tranſparent ſide the Threads were pretty vigorouſly directed; yet not with that force and ſtrength, as when the Glaſs is perfectly clear within, as this was not; becauſe the Fumes of the melted Sulphur adhering to it, made it appear ſomewhat Cloudy.

A Repetition of the foregoing Experiment with Common Sulphur.

I took a quantity of Common Sulphur, nearly equal to what I had uſed before of the Flowers; which having melted as before, I pour'd it into another Globe Glaſs, which I us'd in all Reſpects as the former. But when I had exhauſted it, and given the uſual Motion and Attrition, the effect was ſo ſurprizingly different, that one would ſcarce think it ſhould proceed from the ſame ſort of body. For the Figure of my Hand and Fingers appear'd not only on its inſide, (tho' more faint and pale than in the Experiments of Sealing-wax and Pitch,) but on its outſide there appear'd a brisk Purple Light, ſo beautiful and agreeable to the Eye, that it was very pleaſant to behold. The Strength of this Light may be judged from hence, That the Lines of the Palm of my Hand, which being near the touching Parts, were eaſily diſcoverable by it; and were a ſmall Print plac'd at the ſame diſtance, I queſtion not but it would be legible without any great difficulty. And as this common Sulphur differ'd vaſtly in that part of the Experiment already related, from the former, ſo likewiſe in the latter; for when the Hoop of Threads came to be held over it, (under the ſame Circumſtances as in the other) they were directed toward it as vigorouſly as in any Experiment heretofore made. The Parts lin'd and tranſ-

tranſparent perform'd much alike; if there was any difference, it ſeem'd to incline to that part lin'd with the Sulphur. Likewiſe in this Experiment as in the laſt, the Sulphur was looſen'd and ſeparated from the Glaſs that contain'd it: Which therefore cannot be urg'd, as any ways conducible to the Unſucceſsfulneſs of the former.

A Repetition of this laſt Experiment with a larger quantity of Sulphur.

Into a Globe Glaſs of the ſame ſize of the former, which was about five Inches Diameter, I pour'd about two Pound of melted Sulphur: This, when cold, contracted it ſelf, and became looſe from every part of the Glaſs, as in the former Experiments: The Sulphur cover'd more than half the inward ſurface of the Globe, and its thineſt part was about half an Inch in thickneſs. Towards the Axis it appear'd to be more than a full Inch in Subſtance. This Glaſs, when exhauſted of its Air, was uſed in every thing as the former. The Light produc'd was very conſiderable, I mean that on its outſide, and attended with the ſame Colour and Vivacity as before; nor was that leſs vigorous on its inſide. Comparing it with the former, notwithſtanding the thickneſs of the Lining, it was at leaſt four times greater; but the Figure of the Fingers was now not ſo diſtinguiſhible as in the other. But on the part near the Axis (as I hinted before) where the ſubſtance of the Sulphur was much the greateſt, no Light was produc'd; which may be attributed in a great meaſure to the ſlowneſs of the motion and the weakneſs of it there, in compariſon with that which is made more remote from it, where it was that the Light was ſeen within. What farther is obſervable, was that the Light which was viſible on its outſide only, appear'd to be produc'd between the inward Surface of the Glaſs and the convex Surface of the Sulphur; the Sulphur being looſe from it gave liberty for the Air to be taken from thence as well as from the other Parts: The Light which was there produc'd, being reflected by the hard, polliſh'd, and nearly contiguous Body of Sulphur, ſeems to me to be the Reaſon why it appear'd with ſo much vigour. This outward Light would ſometimes break into Branches all over the lin'd part of the Globe, in as odd, and as pleaſant a manner, as what has been taken notice of in former Experiments, with the large Globe Glaſs, upon letting in a little Air. And what farther occurr'd in this Experiment was, that when the Attrition was ceas'd, but the Globe continuing its motion, abundance of Sparks of Light would appear all round it, and continue ſo to do for ſome time, without any freſh Attrition. I cannot conclude without taking ſome notice, that in the Experiments formerly made on Sulphur, mention'd in my Book of *Phyſico-Mechanical Experiments*, I us'd the ſame ſort as in the firſt of theſe; and had it been my Chance to have happen'd on the common ſort, I doubt not but the Succeſs of it would have been different from what is there related, which I hope to try at one time or other.

Coroll. Hence we may ſee what *Remarkable Changes* may be produc'd in Bodies, with reſpect to their *Electrical* and *Luminous* Qualities, by their different *Management* and *Preparation:* As here 'tis plain that *common* Sulphur, which is plentifully endow'd with *both* theſe Qualities, by undergoing the *Chimical* Fire (which *ſublimes* it into *Flowers*,) is almoſt totally depriv'd of them *both*.

'erhaps by *other* management of the ſame Body, this Loſs might be repair'd again. And 'tis poſſible there may be *Chymical* Operations, which inſtead of impairing, may *Improve* and Heighten theſe wonderful Qualities of Bodies: Nay for ought that I know, may as well *give them a new*, where they never were at all; as to take them away, where they once were in a great degree of Perfection. The Powers of Nature are not to be determin d beforehand by *Demonſtration*, but to be ſearch'd out by *Obſervation* and *Experiment*. And as theſe Trials have open'd the way to *ſomething that looks with a very promiſing Aſpect*; ſo we hope by degrees to purſue them with ſome good Succeſs.